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EXAMINER
ZEMAN, ROBERT A

| | |
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| ART UNIT | PAPER NUMBER |
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1645

DATE MAILED: 04/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/555,649

Applicant(s)

LADANT ET AL.

Examiner

Robert A. Zeman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 January 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15, 17-32 and 34-62 is/are pending in the application.
- 4a) Of the above claim(s) 1-9, 23, 24 and 39-45 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10-15, 17-22, 25-32, 34-38 and 46-62 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-15, 17-32 and 34-62 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.

- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

The amendment and response filed on 1-10-03 are acknowledged. Claims 10-12, 14-15, 17-22, 25-32 and 34-38 have been amended. Claims 16 and 33 have been deleted. Claims 46-62 have been added. Claims 1-15, 17-32 and 34-62 are pending.

This application contains claims 1-9 and 39-45 drawn to an invention nonelected with traverse in Paper No. 14. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Claims 10-15, 17-22, 25-32, 34-38 and 46-62 are currently under examination.

Claim Objections Withdrawn

The objection to claims 10 and 25 for being dependent on non-elected claims is withdrawn in light of the amendment thereto.

Claim Rejections Withdrawn

The rejection of claims 10, 16 and 25-38 under 35 U.S.C. 112, second paragraph, as being rendered vague and indefinite by the use of the term "capable of" is withdrawn in light of the amendment thereto and the cancellation of claims 16 and 33.

The rejection of claim 10 under 35 U.S.C. 112, second paragraph, as being rendered vague and indefinite by the use of the term "generating a signal amplification" is withdrawn in light of the amendment thereto.

The rejection of claim 12 under 35 U.S.C. 112, second paragraph, as being rendered vague and indefinite by the use of the term "leads to" is withdrawn in light of the amendment thereto.

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The rejection of claims 14 and 27 under 35 U.S.C. 112, second paragraph, as being rendered vague and indefinite by the use of the term "whose activity is restored" is withdrawn in light of the amendment thereto.

The rejection of claims 15 and 32 under 35 U.S.C. 112, second paragraph, as being vague and indefinite by the use of improper Markush language is withdrawn in light of the amendment thereto.

The rejection of claims 19 and 35 under 35 U.S.C. 112, second paragraph, as being rendered vague and indefinite by the use of the phrase "signaling molecule corresponds to the synthesis of cGMP" is withdrawn in light of the amendment thereto.

The rejection of claims 18 and 34 under 35 U.S.C. 112, second paragraph, as being rendered vague and indefinite by the use of the phrase "signaling molecule corresponds to the synthesis of cAMP" is withdrawn in light of the amendment thereto.

The rejection of claims 20 and 36 under 35 U.S.C. 112, second paragraph, for reciting improper Markush language is withdrawn in light of the amendment thereto.

The rejection of claims 20 and 36 under 35 U.S.C. 112, second paragraph, as being rendered vague and indefinite by the use of the phrases "such as" and "of the type of" is withdrawn in light of the amendment thereto.

The rejection of claims 20 and 36 under 35 U.S.C. 112, second paragraph, as being rendered vague and indefinite by the use of the term "the reporter gene expression is selected from the group consisting of..." is withdrawn in light of the amendment thereto.

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The rejection of claims 21 and 37 under 35 U.S.C. 112, second paragraph, as being rendered vague and indefinite by the use of the term "mutant molecule" is withdrawn in light of the amendment thereto.

The rejection of claims 22 and 38 are rendered vague and indefinite by the use of the phrase "an *E. coli* strain, or in any bacterial deficient in endogenous adenylate cyclase or any other eukaryotic cell" is withdrawn in light of the amendment thereto.

The rejection of claim 25 under 35 U.S.C. 112, second paragraph, as being rendered vague and indefinite by the use of the term "generating an amplification" is withdrawn in light of the amendment thereto.

The rejection of claim 33 under 35 U.S.C. 112, second paragraph, as being rendered vague and indefinite by the use of term "having stimulating or inhibitory affinity" is withdrawn. Cancellation of said claim has rendered the rejection moot.

Claim Rejections Maintained and New Grounds of Rejection

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 10-15, 17-22, 25-32, 34-38 and 46-62 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Fields et al. (U.S.

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Patent 5,468,614) essentially for the reasons set forth in the rejection of claims 10-17, 20-22, 25-33 and 36-38 in the previous Office action.

Applicant argues:

1. Fields et al. does not recite the use of an enzyme.

Applicant's arguments have been fully considered and deemed non-persuasive.

The instant claims are drawn to methods of selecting a molecule of interest that can bind to a target ligand (or identifying a substance that modulates said binding) utilizing signal amplification system comprising a bacterial multi-hybrid system utilizing enzyme fragments and/or enzyme modulators to detect protein-protein interactions. The instant claims are also drawn to methods wherein said selection is done in a bacterium.

As outlined in the previous Office action, a close reading of Fields et al. (column 7, line 50 to column 8, line 22) discloses a method that can be applied to "any detectable function requiring separable domains of an amino acid sequence which can be reconstituted. Said method detects the interaction between a first test protein and a second test protein. The detectable function is provided by an amino acid sequence which includes a first domain and a second domain which are capable of producing a detectable function (enzyme activity for example) when they are in sufficient proximity to each other in the host cell (see column 7, lines 50-61). As pointed out by Applicant in his response, Fields et al disclose, "the method of the present invention can be applied more generally to any detectable function requiring separable domains of an amino acid sequence which can be reconstituted". This would include enzyme activity. Moreover, it should be noted that the specific embodiments with regard to the specific components utilized in the hybrid system disclosed by Fields et al. constitute obvious variants of the disclosed system.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 10-15, 17-22, 25-32, 34-38 and 46-62 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 10-23 and 24-38 of copending Application No. 09/973013. Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims are drawn to methods of selecting a molecule of interest that can bind to a target ligand (or identifying a substance that modulates said binding) utilizing signal amplification system comprising a bacterial multi-hybrid system utilizing enzyme fragments and/or enzyme modulators to detect protein-protein interactions. The instant claims are also drawn to methods wherein said selection is done in a bacterium.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 10-15, 17-22, 25-32, 34-38 and 46-62 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 10 and 25 are rendered vague and indefinite by the use of the phrase "amplifying a signal generated by..." What signal? How is said signal amplified? Moreover, how can the amplified signal be generated by the binding of the molecule of interest and the target ligand (step 2) when said signal is amplified in step (3)? Additionally, with regard to claim 25 how can one determine whether a given substance partially "inhibits" the "interaction" when the transcriptional activation recited in step (3) is an all or nothing phenomenon?

Claims 10 and 25 are rendered vague and indefinite by the use of the term "capable of. Having the capacity do something is not analogous to that "something" actually being done. Therefore, it is impossible to determine the metes and bounds of the claimed invention.

Claims 10, 13, 17, 21 and 25-38 are rendered vague and indefinite by the use of the term "interaction". What "interaction" other than binding is Applicant referring to?

Claim 17 is rendered vague and indefinite by the use of the phrase "detected by signal amplification". It is unclear what is mean by said term. Moreover, it is unclear how a signal is generated by protein:protein binding and how said signal is correlated to the stated goal of the method steps.

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Claims 20 and 36 are rendered vague and indefinite by the use of the phrase "gene with a selectable phenotype". Genes do not have phenotypes, selectable or otherwise.

Claims 22 and 38 are rendered vague and indefinite by the use of the phrase "performed in a bacterial strain". Said language is confusing. Is Applicant referring to a specific bacterial strain or bacteria in general?

Claims 46 and 52 recite improper Markush language. The penultimate member of the Markush group should be preceded by the article "or".

Claims 49 and 55 recite the limitation "color marker" in line 1. There is insufficient antecedent basis for this limitation in the claim. The instant claim refers to a gene product while the antecedent claim recites genes.

Claims 51 and 57 recite the limitation "the phage" in line 1. There is insufficient antecedent basis for this limitation in the claim. The instant claim refers to a gene product while the antecedent claim recites genes. Moreover, the antecedent claims refer to phage receptors not phages.

Claim 59 is rendered vague and indefinite by the use of the term "bacterial cell". A bacterial cell is not considered a "strain" of bacteria.

Claim 60 is vague and indefinite since it is dependent on a canceled claim.

Conclusion

No claim is allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert A. Zeman whose telephone number is (703) 308-7991. The examiner can normally be reached on Monday- Thursday, 7am -5:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynette Smith can be reached on (703) 308-3909. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-4242 for regular communications and (703) 308-4242 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0196.

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LYNETTE R. F. SMITH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600

Robert A. Zeman
April 2, 2003